



the tumor and used to suppress the expression gene sequences of interest. In another example anti-sense sequences directed against gene sequences that control proliferation can be delivered within an electroprocessed matrix coated stent. The stretch normally associated with the placement of the stent initiates smooth muscle cell proliferation, and anti-sense sequences designed to suppress cell division reduce the deleterious effects of the smooth muscle cell proliferation associated with the procedure. In another embodiment, the electroprocessed material delivers sense and antisense oligonucleotides to promote or to inhibit localized cell function for a period of time. For example, an antisense oligonucleotide is released from an electroprocessed material to suppress the expression of a deleterious enzyme in a wound. Examples of such enzymes are matrix metalloproteinases (MMPs), which are often overexpressed in chronic wounds. In another example, the electroprocessed material applied to a wound releases plasmids that contain nucleotide sequences coding for tissue inhibitors of metalloproteinases (TIMPs). Cells in the wound will express TIMPs, resulting in local delivery of TIMPs that will inhibit MMP function.

Physical processing of the formed electroprocessed material is another way to manipulate release kinetics. In some embodiments, mechanical forces, such as compression, applied to an electroprocessed material hasten the breakdown of the matrix by altering the crystalline structure of the material. Structure of the matrix is thus another parameter that can be manipulated to affect release kinetics. Polyurethanes and other elastic materials such as poly(ethylene-co-vinyl acetate), silicones, and polydienes (e.g., polyisoprene), polycaprolactone, polyglycolic acid and related polymers are examples of materials whose release rate can be altered by mechanical strain.

Release kinetics can also be controlled by preparing laminates comprising layers of electroprocessed materials with different properties and substances. For example, layered structures composed of alternating electroprocessed materials can be prepared by sequentially electroprocessing different materials onto a target. The outer layers can, for example, be tailored to dissolve faster or slower than respect the inner layers. Multiple agents can be delivered by this method, optionally at different release rates. Layers can be tailored to provide a complex, multi-kinetic release profile of a single agent over time. Using combinations of the foregoing can provide for release of multiple substances released, each with a complex profile.

